



CLIMATE ADAPTATION STRATEGIES

City of San Diego CMAP

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Krout & Associates

Similar Cities Researched

- Chicago
- Chula Vista
- Portland
- San Francisco



City of Chicago

- **Increased Heat Temperatures**

- Update the heat response plan, focusing on vulnerable populations
- Complete further research into urban heat island effect and pursue way to cool hot spots

City of Chicago

- **Flooding/Water Management**

- Prepare a watershed plan that factors in projected climate changes
- Collaborate with local water agency to find ways to use available space – from vacant land to parking lots – to manage storm water
- Green Urban Design plan collaboration among City departments, nonprofits and private businesses to use new technologies and design to help manage both flooding and heat. Plan includes: (1) Capturing as much rain as possible where it falls using permeable pavement, rooftop gardens and green alleys, and (2) Individual households will be encouraged to take own steps to reduce flooding, such as installing rain barrels and back-up power for sump pumps
- City, nurseries, developers and other stakeholders will work together to amend the landscape ordinance to accommodate plants that can tolerate the altered climate
- Rain gardens and permeable pavement capture storm water on-site (adaptation), reducing the amount of storm water that must be pumped and the energy required to pump it (mitigation)

City of Chicago

- **Partnerships**

- Partner with civic and community leaders to ensure the public has substantive information about the impact of climate change on individual lives and how to respond to these problems
- Work with businesses to analyze their vulnerability to climate change and to help them plan for the future
- Use Green Steering Committee of City Commissioners to oversee City implementation efforts and the Green Ribbon Committee of business and community leaders to assess how the Plan is being implemented, recommend revisions, report to the Mayor, and all Chicagoans on progress

City of Chula Vista

- **Increased Heat Temperatures**

- Conservation Division will establish a procedure for notifying residents, businesses, and community organizations about these events
- The Public Works Department (Operations & Engineering) will perform a pilot project to evaluate multiple reflective or “cool” pavement strategies to help inform creation of new policies for municipal paving capital improvement projects and private parking lot projects

City of Chula Vista

- **Flooding/Water Management**

- The Storm Water Management Division will update CVMC Section 14.20.110 to remove landscape irrigation, irrigation water, and lawn watering from the list of exempted discharges
- Collaborate with the local water districts to create an "Onsite Water Reuse Incentive Fund" to provide rebates for onsite water reuse
- To encourage low-impact development (LID), City staff will provide incentives through expedited permitting process or another non-monetary means to project proponents
- The Land Development Division will update the grading ordinance to require that all "tidally influenced" projects account for anticipated sea level rise for the next 50 years (currently projected at 1.5') into their project development and grading plans

City of Chula Vista

- **Rising Sea Level**

- Land Development Division staff will update the Subdivision Manual to add requirements for development projects within “tidally influenced” areas to demonstrate, prior to Tentative Map Approval or grading plan approval, that: (1) the storm drain system for the project is designed to maintain at least a dry driving lane in each direction during a 50 year design storm that occurs at the highest high tide with a projected 1.5’ feet of sea level rise. and (2) the storm drain system for the project is designed to prevent any property damage with a 100-year storm occurring at the highest high tide with a projected 1.5’ of sea level rise

City of Chula Vista

- **Economic Development**

- Revise the City's "Municipal Environmentally Preferable Purchase Policy" to greater emphasize the procurement of a broader array of eco-friendly goods and services leveraging Chula Vista's annual supplies and services budget of approximately \$14 million
- Current business-oriented environmental outreach efforts through the FREBE and CLEAN Business Programs will be revised to include an assessment of a business's "vulnerability" to future climate change impacts and recommendations to reduce associated future risks and costs.
- The Economic Development Division will continue to pursue the development of an Eco-Industrial/Green Business Park

City of Portland

- **Planning Guidance**

- Before 2012, **prepare an assessment of climate-related vulnerabilities**, strengths and resiliency of local food, water and energy supplies, infrastructure, transportation and freight movement, floodplains, watershed health, public health, public safety, social services and emergency preparedness
- Before 2012, **monitor implementation** of climate change preparation actions and emerging data on risks. If necessary, revise adaptation plans more frequently than the **three-year revision cycle for the overall plan**

City of Portland

- **Planning Guidance**

- Before 2012, **collaborate with Metro and state agencies** to update and ensure continued accuracy of land hazard mapping and inventories, including landslide hazards, floodplains and areas subject to wildfire risk.
- Before 2012, **participate actively in state of Oregon code-development processes** to ensure that building codes support buildings that can adapt to higher temperatures, stronger storms, and other physical impacts of climate change.
- Before 2012, integrate climate adaptation and natural hazard mitigation strategies into major planning efforts and **consider the potential for substantial numbers of “climate refugees”** in contemplating future growth scenarios.

City of San Francisco

- **Rising Sea Level**

- Identify priorities for protection of development
- Integrate soft shoreline protection into hard shoreline protection structures whenever feasible
- Provide compensatory mitigation when shoreline protection cannot be avoided and will cause adverse impacts
- Require that public access is sited, designed and managed to avoid significant adverse impacts from sea level rise and shoreline flooding
- Create buffer zones for marsh migration
- Provide adequate funding to local governments and for research

Sector-Based Adaptation

Affected Sectors	Climate Stressor	Climate Vulnerability	Adaptation Strategies
Water Resources	<ul style="list-style-type: none"> • Changes in precip. • Extreme events 	<ul style="list-style-type: none"> • Decreased water supply • Increased flooding 	<ul style="list-style-type: none"> • Create water markets • Improve flood control
Bay/Aquatic Ecosystems	<ul style="list-style-type: none"> • Sea level rise • Increased water temp 	<ul style="list-style-type: none"> • Increased salinity • Habitat loss 	<ul style="list-style-type: none"> • Install “living shorelines” • Protect critical habitat
Human Health	<ul style="list-style-type: none"> • Increased air temp. • Extreme events 	<ul style="list-style-type: none"> • Vector-borne illness • Heat-related health effects 	<ul style="list-style-type: none"> • Designate “cooling centers” • Vector-borne surveillance
Agriculture	<ul style="list-style-type: none"> • Changes in precip. • Sea level rise 	<ul style="list-style-type: none"> • Drought • Salt-water intrusion 	<ul style="list-style-type: none"> • Plant salt tolerant crops • Drought management
Forest/Terrestrial Ecosystems	<ul style="list-style-type: none"> • Changes in precip. • Increased air temp. 	<ul style="list-style-type: none"> • Disease, Fire • Species shifts 	<ul style="list-style-type: none"> • Fire mgmt. and control • Invasive species mgmt
Growth & Infrastructure	<ul style="list-style-type: none"> • Changes in precip. • Sea level rise 	<ul style="list-style-type: none"> • Increased population growth • Increased flooding 	<ul style="list-style-type: none"> • “Smart” site and building design • Retrofit storm water mgmt.
Coastal Zone	<ul style="list-style-type: none"> • Sea level rise • Extreme events 	<ul style="list-style-type: none"> • Submergence of low-lying lands • Increased coastal flooding 	<ul style="list-style-type: none"> • Protect coastal infrastructure • Increase natural vegetative buffers

Scientific Assessment

Adaptation: Phase I

Adaptation: Phase II